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A NEW GENUS AND SPECIES OF CHARACID FISH FROM THE BAYANO RIVER BASIN, PANAMÁ (PISCES: CYPRINIFORMES)

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As a part of their pioneering work on the fish fauna of Panamá, Meek and Hildebrand (1916) described the fauna of the lower Bayano river. At that time, travel to the upper tributaries of the river was very difficult and was not attempted by them; however, recent new roads have opened previously poorly-collected areas of the region to reveal a unique fauna in the upper Bayano tributaries. Dr. J. D. McPhail, University of British Columbia, is preparing a study on the ecology and distribution of the fishes of the area and has made specimens of an unusual characid available for the following description.

I wish to thank Dr. Donald L. Kramer of the Smithsonian Tropical Research Institute (STRI) and Dr. McPhail for specimens of the new species, along with information regarding its distribution and ecology. Dr. Kramer also made valuable comments on the manuscript. Richard Goodyear of the Universidad de Panamá has aided in acquisition of specimens and supplied valuable information on the Bayano river. Dr. Stanley H. Weitzman kindly read the manuscript and has participated in numerous discussions on characids.

Methods are those used in Fink and Weitzman (1974).

TABLE 1. Morphometrics of *E. bayano* in percent of standard length

Characters	males, range	females, range	male, holotype
Standard length	43.2–52.1	40.4–55.9	51.7
Greatest depth	27.7–33.7	31.3–34.7	31.7
Snout–dorsal fin origin	48.9–53.0	50.2–54.0	49.5
Snout–pectoral fin origin	24.7–27.1	25.0–27.8	24.7
Snout–pelvic fin origin	40.6–45.3	42.0–46.4	42.5
Snout–anal fin origin	57.6–61.7	60.8–64.0	58.0
Caudal peduncle depth	12.3–15.8	11.6–13.8	14.7
Caudal peduncle length	11.9–14.7	11.6–13.4	14.7
Pectoral fin length	22.2–24.3	21.1–23.5	23.0
Pelvic fin length	16.2–18.2	14.8–16.6	18.0
Dorsal fin length	22.9–25.2	23.1–26.7	24.0
Head length	24.2–27.6	25.9–27.8	25.3
Eye diameter	9.1–10.3	9.5–11.1	9.1
Snout length	6.1– 7.6	6.5– 8.1	6.9
Interorbital width	7.5– 8.2	7.7– 8.8	7.9
Upper jaw length	10.4–12.4	10.9–12.9	10.8
Eye–dorsal fin origin	35.0–38.9	36.4–38.3	35.4
Dorsal fin origin–caudal fin origin	51.4–55.0	50.6–54.1	52.8

Morphometric characters are given as percent of standard length (SL). In the description, range is given for morphometric characters; range for males and females separated by sex and the morphometric characters of the holotype are given in Table 1. Meristic characters are given in the text, holotype first, followed in parentheses by the range. Paratypes have been deposited in the National Museum of Natural History, Washington, D.C. (USNM), British Museum (Natural History) (BMNH), Academy of Natural Sciences, Philadelphia (ANSP), California Academy of Sciences, San Francisco (CAS), and Zoological Museum of the University of Amsterdam (ZMA).

Eretmobrycon, new genus

Type-species: *Eretmobrycon bayano*, new species.

Diagnosis: Pelvic fin with i,8 rays. Caudal fin of mature males asymmetrical, lower lobe much enlarged. Ventral rays of lower caudal fin lobe thickened and expanded dorsoventrally (Fig. 1). Caudal fin

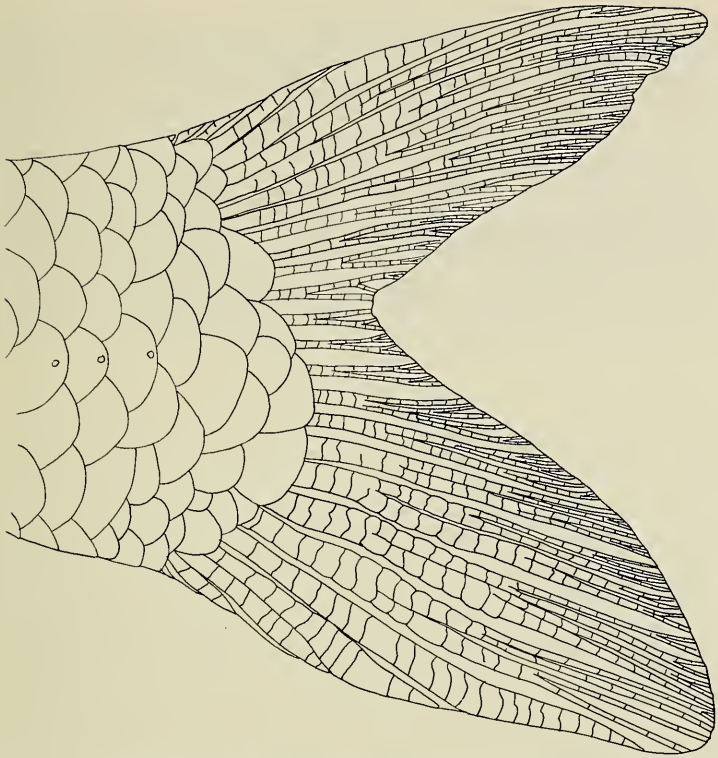

Fig. 1. Caudal fin of *E. bayano*, male, 52.3 mm, in breeding condition, from USNM 214006.

of large adult females often asymmetrical but not as much as in males. Monotypic.

Other characters of the genus include: premaxillary with an irregular row of 4–6, usually 5, tricuspid outer row teeth and four inner row teeth with 5–6 cusps. Lateral line complete. Third infraorbital well ossified, contacting horizontal limb of preopercle ventrally and with a naked area between itself and vertical limb of preopercle. Dorsal fin, pelvic fins, pectoral fins, and anal fin with spinules in breeding males. Caudal fin with irregular scales at base, some somewhat enlarged, especially on the lower caudal fin lobe. Caudal peduncle of males much deeper than in females. Precaudal vertebrae 17–18; total vertebrae 37–38.

Etymology: From *eretmon*, meaning paddle, referring to the paddle-like lower caudal fin lobe, and *Brycon*, a genus of American characids.

FIG. 2. Holotype of *E. bayano*, male, 51.7 mm, USNM 213842.

Eretmobrycon bayano, new species
Figures 1–4

Holotype: USNM 213842, male 51.7 mm SL; Panamá, Bayano river basin, pool in small stream about 19 km along road from El Llano to Carti, about 0.5 km downstream from the road. Collected 10 March, 1973 by J. D. McPhail and R. Dressler.

Paratypes: All with same data as holotype: USNM 213843, 22 specimens 32.1–55.9 mm; ANSP 130186, 2, 46.5–53.6 mm; CAS 31895, 2, 43.2–46.8 mm; BMNH 1975.2.3.1–2, 2, 43.6–46.9 mm; ZMA 113.490, 2, 49.0–52.1 mm.

Other specimens: USNM 214006, Panamá, Bayano river basin, first stream on road from El Llano to Carti, approximately 11 km from main road between Chepo and Bayano Dam sites, collected 24 Jan. 1974 by D. L. Kramer, 7 specimens 41.9–52.9 mm (1 specimen cleared and stained); USNM 214007, 40 specimens 30.4–57.5 mm, same data as USNM 214006, but collected 15 Jan. 1975; USNM 214664, 36 specimens 16.8–53.9 mm, same data as USNM 214006, but collected 23 April 1975.

Description: The following description is based on specimens selected over the size range from the types and USNM 214006. Standard length of examined specimens 40.4–55.9 mm. Body elongate, compressed laterally, greatest body depth 27.7–34.7 percent. Predorsal profile convex with a slight concavity at nape. Profile between posterior dorsal fin base and anterior adipose fin base slightly convex, with a slight dip at adipose fin base. Posterior to adipose fin, profile slightly concave to upper procurrent caudal fin rays. Distance from eye to dorsal fin 35.0–38.9; distance from dorsal fin origin to end of caudal peduncle 50.6–55.0. Ventral profile gently rounded from jaws to anus; steepest inclination ventral to jaws. Ventral profile with greatest protrusion just anterior to pelvic fin. Profile along anal fin base straight in females, slightly concave anteriorly and slightly convex posteriorly in males; between anal fin and procurrent caudal rays, body profile concave in females, convex in males. In males, lower procurrent caudal fin rays protrude more than upper procurrent rays. Caudal peduncle depth 11.6–15.8 (Fig. 5); peduncle length 11.6–14.7.

Fig. 3. Female paratype of *E. bayano*, 54.3 mm, USNM 213843.

Head length 24.2–27.8. Eye diameter 9.1–11.1. Snout length 6.1–8.1. Least bony interorbital width 7.5–8.8. Maxillary sloping ventrally and posteriorly, forming an angle of 50–60 degrees to longitudinal body axis; upper jaw length 10.4–12.9. All teeth with median cusp longest. Premaxillary with 4 inner row teeth each with 5–6 cusps, and 4–6, usually 5 tricuspid outer row teeth; first, third, and fifth outer row teeth set slightly anterior to other outer row teeth. Maxillary with 2–3, usually 2, teeth each with 5–7 cusps. Dentary with 4 large quinquecuspid teeth anteriorly, 4–6 tricuspid to conical teeth posteriorly; second tooth from symphysis offset slightly anterior to tooth row; fourth tooth from symphysis curves slightly posteriorly. No teeth present on vomer, palatines or pterygoids.

Fontanels moderately long, that part anterior to epiphyseal bar about half the length of that part posterior to bar. Gill rakers moderate, 15 counted in the cleared and stained specimen. Circumorbital bones well ossified; infraorbital 2 wide, no fleshy area ventral to it; infraorbital 3 wide, contacting preopercle ventrally; a fairly wide area of skin posterior to infraorbital 3.

Scales moderately large, cycloid, with concentric circuli and 0–10 radii on exposed posterior field. Lateral line complete, with 37–39, usually 37–38 perforated scales. Lateral line often with a slightly irregular ventral curve on side of body from origin to below dorsal fin, then continuing with a gentle irregular dorsal curve to caudal fin base. Scales above lateral line 6–7 (rarely 7); scales below lateral line 5. Predorsal scales 12–13. Scale sheath at anal fin base of about 8–10 scales in a single row. Axillary scale present dorsal to pelvic fin insertion. Base of caudal fin with irregular scales, some somewhat enlarged, especially on lower caudal fin lobe (Fig. 1).

Dorsal fin with 2 anterior unbranched rays and 9 (8[4], 9 [22]) branched rays. Dorsal fin origin anterior to anal fin origin, posterior to pelvic fin origin, nearer eye than caudal fin base. Distance from tip of snout to dorsal fin origin 48.9–54.0. Third or fourth ray of dorsal

Fig. 4. Live specimen of *E. bayano*, male, 52.9 mm, same locality data as USNM 214006, collected 23 April 1975 by D. Kramer.

fin longest, posterior rays shorter, forming rounded posterior margin of fin; length of longest ray 22.9–26.7. In breeding males minute spinules present, sparingly, on first through fourth branched dorsal fin rays. The spinules occur singly, primarily on the posterior main ray branch segments, more numerous distally.

Anal fin with v (vi[9], vii[16]) unbranched rays and 28 (26[1], 27[2], 28[13], 29[7], 30[2]) branched rays. First through third or fourth unbranched rays usually visible only in radiographs or cleared and stained specimens. Origin of anal fin posterior to midpoint of standard length 57.6–64.0. Posteriormost unbranched ray and first through seventh or eighth branched rays longer, with successive posterior rays shorter, forming an abruptly protruding fin margin anteriorly and a straight margin posteriorly. Dorsally recurved anal fin spinules present in adult breeding males; these occur on the posteriormost unbranched ray and on as many as all branched rays in males in full breeding condition. Spinules present on posterior edge of fin rays, usually in bilateral pairs, with one spinule pair per bony ray segment. Spinules less numerous on anterior branches of branched rays than on posterior branches. On extreme distalmost segments of anterior ray branches, spinules may be on anterior margin of ray segments instead of posterior margin. Non-breeding males may have small nubbins instead of spinules. Fin often fleshy around spinules. Anterior branched anal fin rays in all males somewhat thicker than corresponding rays in females.

Pectoral fin with one unbranched ray and 10 (9[1], 10[15], 11[11]) branched rays. Pectoral fins reach slightly beyond pelvic fin origin. Distance from tip of snout to dorsal end of pectoral fin base 24.7–27.8 and length of pectoral fin from base to tip of longest ray 21.1–24.3. Small spinules present in fully developed breeding males on first unbranched ray and first through fifth to seventh branched rays; most spinules point ventral-ward and are on posterior edges of rays, one or

two to a bony ray segment. A few dorsal-pointing spinules on longest rays, one to a ray segment (these may occur on ray segments along with two ventral-pointing spinules).

Pelvic fin with i,8 rays in all specimens, distal fin tip reaching just before or just to anal fin origin. Distance from tip of snout to pelvic fin origin 40.6–46.4; pelvic fin length 14.8–18.2. Males with antero-ventral pointing spinules on all pelvic fin rays. Spinules occur primarily distal to branching point of branched rays on anteriormost four fin rays, but occur proximal to that point in more posterior rays, area covered progressively increasing with each successive ray. Spinules more numerous on posterior main branch of ray; when main ray branches branched, spinules more numerous on posterior branch of secondary branch. Spinules occur singly or in pairs on each bony ray segment. When only one spinule present, it occurs on posterior edge of segment; when in pairs, spinules on both anterior and posterior edge of ray segment (posterior spinule of pair is first to develop). Paired spinules occur primarily on posterior main ray branch, but are commonly found on anterior main ray branch on more posterior fin rays.

Caudal fin with 10/9 principal rays in all specimens; fin forked, not split to base. In adult males and large adult females, lower lobe much larger than dorsal lobe; posteriormost two ventral procurrent rays and rays 9–4 (numbering ventralmost principal caudal ray as 9) enlarged and dorsoventrally expanded; this condition more extreme in males than in females (Figs. 1–3). In small females and immature males caudal fin symmetrical. No spinules on caudal fin rays.

Precaudal vertebrae 17 (17[12], 18[12]). Total vertebrae 38 (37[6], 38[19]).

Color in alcohol: Ground color cream brown. Scales of back and sides to midline with large dark chromatophores on inner surface of free margin forming a reticulate pattern. In dermis adherent to inner scale surface, anterior to large chromatophores, occur numerous smaller black chromatophores. Numerous, less dark chromatophores approximately size of marginal scale chromatophores, in dermis medial to scales (and medial to layer adherent to scales). Anteriorly, ventral to lateral midline, small black chromatophores less numerous; more ventrally, large chromatophores less regular and less numerous with loss of reticulate pattern. No chromatophores on belly. Above anal fin, ventral to lateral midline, most chromatophores black, of dermal type, irregularly placed, partially following myomere junctions. Dark stripe posteriorly along lateral midline, becoming concentrated into a rounded caudal blotch. Dark chromatophores extend to distal ends of middle caudal fin rays. Numerous small dark chromatophores cover top of head and lower lip, extend along maxillary, around orbital rim, anteriorly along vertical preopercle limb, and on opercular skin flap. Larger, less dark chromatophores loosely scattered under infraorbital bones and opercle. No well defined humeral spot.

Dorsal fin with numerous dark chromatophores along fin rays and on

interradial membrane immediately adjacent to fin rays, often more concentrated at fin base. Adipose fin with numerous small dark brown chromatophores. Caudal fin with dark chromatophores along dorsal and ventral ray surface and on interradial membrane along posterior fin margin; numerous small dark chromatophores along dorsal margin of dorsal lobe and ventral margin of ventral lobe. Anal fin with small brown chromatophores along rays and on interradial membrane. Pelvic fins and pectoral fins with dark chromatophores along fin rays; no chromatophores on interradial membrane.

Color in life: Body light olive brown above and silvery white below a mid-lateral band of silver or greenish gold (color of band depends on angle of light reflection). Band along posterior two-thirds of body. Dark caudal spot and faint humeral spot present. Males with yellow at base of upper caudal fin lobe and in middle of lower caudal fin lobe; faint black streaks along fin rays on lower caudal fin lobe. Dorsal fin slightly dusky; other fins nearly hyaline. Iris of eye silvery except for yellow spot dorsally. Female coloration similar to males but yellow on caudal fin fainter.

Color description based on information supplied by D. Kramer and from live specimens kept in aquaria; see Fig. 4 for color pattern in life.

Ecology: According to Drs. McPhail and Kramer (in litt.), the watershed of the habitat of *E. bayano* consists of heavily forested steep hills. The type-collection was made in a small stream, in a rocky-bottomed pool about 15 m long, 8 m wide, and less than 50 cm deep. Dr. Kramer collected in a small stream of moderate gradient with pools alternating with riffles and small falls; mean width of the stream is about 3 m, depth rarely over a meter. The stream bed is sandy with some stones and ledge (except where thick red clay eroded from the road has covered the bottom) and moderate cover in the form of forest debris; the stream has no aquatic macrophytic vegetation. Stream temperature in mid-January (early dry season) in mid-afternoon was 24.5° C.; stream flow was estimated by Kramer at about 0.05 m^3/sec.

Other genera of fishes collected with *E. bayano* included *Brachyraphis*, *Brycon*, *Bryconamericus*, *Chaetostoma*, *Hypopomus*, *Poecilia*, *Pygidium*, and *Rivulus*.

Dr. McPhail examined stomach and gut contents of *E. bayano* collected at midday. Although most stomachs were empty, the intestines of many specimens contained seeds, terrestrial insects, and in two individuals a few fish scales (not of *Eretmobrycon*). In five specimens Dr. Kramer found aquatic insect larvae, terrestrial insects, and algae to be important components of the stomach contents.

Sexual dimorphism and reproduction: Mature non-breeding males of *E. bayano* can be distinguished from females by the enlarged rays of the lower caudal fin lobe. In some large females these rays are somewhat enlarged but not as much as in males. Sexually ripening or second and third year males which have bred, have poorly developed or reduced spinules on the anal fin rays. Breeding males are easily identified

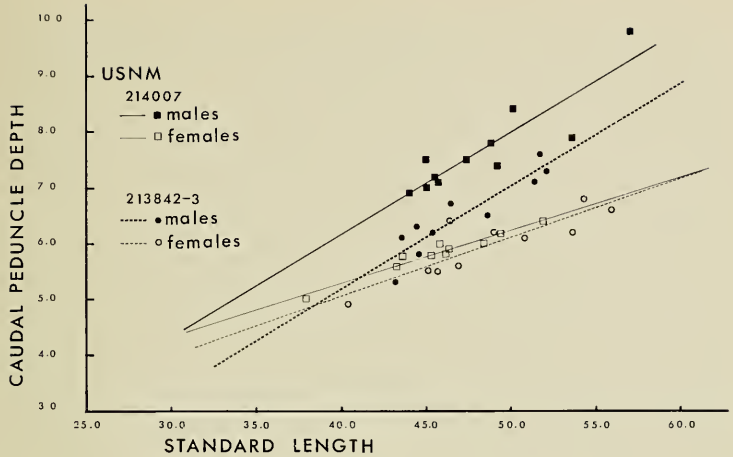

Fig. 5. Caudal peduncle depth related to SL in two populations of *E. bayano*, USNM 214007, breeding; USNM 213842–3, non-breeding. Linear regressions are plotted for males and females of each population.

by their well-developed complement of spinules on all fins but the caudal fin, and large testes; breeding females have plump bellies and ripe ova.

Caudal peduncle depth is greater in males than in females (Fig. 5), and the limited data suggest that peduncle depth in males increases during sexual ripening. The non-breeding males of USNM 213843 and USNM 214664 (the latter not shown in Fig. 5) have virtually identical caudal peduncle depths (these populations come from close, but not identical localities). The breeding males of USNM 214007 have significantely greater caudal peduncle depth than the non-breeding males just mentioned. Note that USNM 214664 and USNM 214007 are from the same locality and presumably represent the same population in breeding and non-breeding condition. Also note (Fig. 5) that caudal peduncle depth of females is very similar in breeding and non-breeding populations.

Dr. Kramer (in litt.) indicates that the smallest maturing male he has examined was 43 mm SL and the smallest maturing female was 40 mm SL. His studies suggest that breeding is seasonal (January to February), and that the breeding population consists primarily of two-year fishes, with a few three-year fish breeding a second time. A large number of specimens in the population samples seem to be immature one-year fish.

Relationship: A thorough phylogenetic analysis of characters that could be used to infer the relationships of *Eretmobrycon* cannot be undertaken at this time. As discussed by Fink and Weitzman (1974)

and Weitzman and Fink (in press), current knowledge of the distribution and lability of many morphological structures traditionally used in characid systematics is woefully inadequate. Determination of the usefulness in classification of such characters as number and shape of premaxillary and maxillary teeth, fin specializations, and size of the third infraorbital is a long-term project and involves examination of many characids from Central and South America and Africa. Such studies are underway. Given this disclaimer, it is possible to speculate on the affinities of *E. bayano* and the validity of the genus.

The characters of *E. bayano* that have prompted erection of a new genus, i.e., the pelvic fin ray count and the specialized caudal fin structure, are of unknown phylogenetic significance. The species cannot be placed in any existing genus without causing a major redefinition of that genus. It may be that future studies will indicate that *E. bayano* should simply be placed in *Bryconamericus*. Until those studies, including a thorough revision of *Bryconamericus* and related genera, are possible, it seems best to recognize the unique specializations of *E. bayano* and place it in a monotypic genus.

Of the genera in Central America and northern South America, *Eretmobrycon* seems most probably related to *Bryconamericus* and *Astyanax*. Members of these genera are rather morphologically and ecologically generalized and widely distributed, especially in South America. The supposed differences between *Astyanax* and *Bryconamericus* may eventually be considered unimportant at the generic level. There are four characters which have been used to separate the two genera:

(1). The number of inner row premaxillary teeth (5 in *Astyanax*, with a few species having 4; 4 in *Bryconamericus*). It becomes evident in reading Eigenmann (1921), that in a small number of species of *Astyanax* the tooth counts cannot be used in generic placement. This is a common problem in systematics of characids; many characters can be used to differentiate species or genera in limited geographical areas, but nearly every systematic character used is labile to such a degree that in some geographical areas generic or species definitions based on these characters break down. Many characid genera "grade" into one another and until a thorough analysis of systematic characters used is completed, this unacceptable situation will remain.

(2). Regular, in *Astyanax*, or irregular, in *Bryconamericus*, placement of the outer row premaxillary teeth was used by Meek and Hildebrand (1916) for separation of these two genera. The outer row teeth may be in a regular series or some may be slightly displaced relative to the other outer row teeth. Although this character is useful in separating the genera in at least some parts of Panamá (Kramer, pers. comm.), Eigenmann (1927) states (and I concur) that among species of *Bryconamericus* over a wide geo-

graphical range, the outer tooth row may be either regular or irregular depending on the species.

(3). Width of third infraorbitals (*Astyanax* has a narrow fleshy area between the third infraorbital and the horizontal limb of the preopercle while *Bryconamericus* has the third infraorbital touching the horizontal limb of the preopercle). This kind of difference has been used to differentiate several characid genera. Eigenmann (1921, 1927) numbered the infraorbitals differently than is done currently; his suborbital 2 is actually infraorbital 3 (see Weitzman, 1962: 28 for a discussion of the osteology of characid orbital bones). Eigenmann diagnosed *Astyanax* as having a naked area ventral to the "second suborbital" (infraorbital 3 of Weitzman) and *Bryconamericus* as having the "suborbital" touching the preopercle ventrally. The character is useful, at least in Panamá. He further defined *Astyanax* as having a naked (fleshy) triangle below the joint between the "first and second suborbitals" (= 2 and 3 infraorbitals) while in *Bryconamericus* there is no naked triangle below the "suborbitals." I have found in cleared and stained specimens that the amount of "naked" area is somewhat variable and simply a function of the size of the third infraorbital; when the third infraorbital is large enough to touch the preopercle ventrally, it is also large enough to touch the second infraorbital along the posteroventral edge of that bone.

(4). Kind and distribution of adult male anal fin hooks and spinules are characters I have found to be of use in Central America. Mature *Astyanax* males have bony hooks on the segments of the fourth unbranched ray and the first through seventh to ninth branched rays, the hook tips pointing toward the fin base. In the sexually ripe *Bryconamericus* males examined, spinules, not hooks as found in most characids, are present on the last unbranched ray and all branched rays, from near the ray bases to their distal tips. These spinules are very thin and point toward the distal ends of the rays in some species and toward the fin base in other species. In fact, on some Panamanian *Bryconamericus*, these spinules covered all of the fins, including pelvic and pectoral fins, dorsal fin, and dorsal and ventral caudal fin lobes. Previous investigations (Fink and Weitzman, 1974), and information supplied by D. Kramer (pers. comm.) indicate that presence of fin spinules or hooks is dependent on breeding season in at least some characids and that different species may be sexually active at different times of the year in the same geographical area. Therefore, care must be exercised in interpreting presence or absence of the structures in these fishes.

Of the four characters mentioned above, *Eretmobrycon* shares (1), (2), (3), and (4) in part, with *Bryconamericus* and not with *Astyanax*.

In dentition and shape of the infraorbital bones, *Eretmobrycon* is virtually identical with *Bryconamericus*. In character (4), *Eretmobrycon* agrees with *Bryconamericus* in having spinules on the last unbranched and all branched anal fin rays. However, the spinules of *Eretmobrycon* are slightly "heavier" (thicker) than the spinules of *Bryconamericus* (although not nearly as massive as the hooks of *Astyanax*). The spinules of *Eretmobrycon* point toward the fin base as in *Astyanax*, not the distal fin edge as in some *Bryconamericus*. Again, we are dealing with a character of unknown phylogenetic significance. Hooks, as found in *Astyanax*, are more commonly found in characids than spinules. The distribution of spinules in characid species clearly not closely related (e.g., *Bryconamericus*, *Carlana* [Fink and Weitzman, 1974], and some "glandulocaudin" genera [Weitzman and Thomerson, 1970], indicates that their presence is probably a convergent specialization appearing throughout the Characidae. Therefore, their presence in *Bryconamericus* and *Eretmobrycon*, while suggestive, cannot be taken as evidence of close relationship.

The presence of four premaxillary inner row teeth is another character common to *Eretmobrycon* and *Bryconamericus*. *Astyanax* usually has five inner row teeth. I expect that four teeth is more specialized than five teeth, and is probably related to mouth size and feeding specializations. As mentioned above, this character should be used with caution because of its lability.

Tubercles (hypertrophied patches of epidermal cells) are present on breeding *Bryconamericus* males from Panama and are absent on *Astyanax* and *Eretmobrycon*. These structures may be found to be important characters but their evaluation is beyond the scope of this paper.

It is reasonable to question the establishment of a new genus for *E. bayano* in view of the overabundance of generic names of Neotropical Characidae. *Eretmobrycon bayano* has one specialization found in no other characids (the hypertrophied lower caudal fin lobe) and another (the pelvic fin ray count of i,8) found only in the genus *Crenuchus*, a highly specialized form belonging to a very different characoid lineage. Since these characters are autapomorphic at this level they are of no use in determining relationships.

Traditionally important systematic characters suggest relationship between *Eretmobrycon* and *Bryconamericus* and the latter may eventually be where *E. bayano* is placed. Nevertheless, my examination of many nominal species of *Bryconamericus* strongly suggests that that genus is polyphyletic and consists of a number of difficult to define lineages. For instance, at least some Central American species of *Bryconamericus* may someday be placed together as a natural group, based in part on the presence of breeding tubercles. I do not believe that *E. bayano* can be precisely related to any species now currently placed in *Bryconamericus* and hesitate to place it in an already polyphyletic genus. It is possible that *E. bayano* is not related to any existing species of *Bryconamericus* but is a specialized relict of a *Bryconamericus*-like form

that entered Panama before the ancestor(s) of *Bryconamericus* now living there. Alternatively, *E. bayano* may be descended from the common ancestor of one of the lineages of *Bryconamericus*.

If *Eretmobrycon bayano* did arise from a *Bryconamericus*-like ancestor, subsequent evolution has resulted in specializations which clearly set it apart from the known species of that genus, i.e. the increase of one pelvic fin ray and the hypertrophied lower caudal fin lobe. The caudal fin lobe hypertrophy in adults, especially males, is perhaps related to breeding behavior. Determination of the function of this particular morphological specialization must await aquarium or field observations of spawning.

Etymology: The specific epithet *bayano* refers to the river basin in which the species seems to be endemic.

Resumen

En el presente trabajo se describe *Eretmobrycon bayano*, neuvo género y nueva especie de la familia Characidae del río Bayano, Panamá. El género *Eretmobrycon* se caracteriza por tener i,8 radios pélvicos, radios caudales del lóbulo inferior muy hipertrofiados (particularmente en los machos) y dos filas de dientes premaxilares.

Los machos de *E. bayano* que no han alcanzado la época de la reproducción, se distinguen de las hembras por poseer radios caudales hipertrofiados y un pedúnculo caudal más alto. En contraste con los machos antes descritos, los machos reproductores tienen los radios inferiores de la aleta caudal más alargados, el pedúnculo caudal más alto y los radios de todas las aletas, excepto la caudal, recubiertas de espínulas.

El desove tiene lugar en enero y febrero de cada año y la mayoría de la población reproductora está formada por individuos de dos años y algunos de tres años que posiblemente desovan por segunda vez.

El habitat propio de la especie son arroyos de montañas poco profundos, en vertientes con una vegetación boscosa. Su dieta básica consiste en semillas, larvas de insectos acuáticos, insectos terrestres y algas.

Con la finalidad de determinar las relaciones del género *Eretmobrycon*, se presenta un breve análisis filogenético de varios caracteres sistemáticos usados para definir a *Astyanax* y *Bryconamericus*. El número de dientes premaxilares en la fila interna (5 en *Astyanax*, aunque algunas especies tienen 4; 4 en *Bryconamericus*) es un carácter útil para la separación de estos géneros en una región geográfica determinada; sin embargo, la similitud del número de dientes entre algunas especies de los dos géneros impide el empleo de este carácter para una diferenciación genérica. La regularidid (en *Astyanax*) o irregularidad (en *Bryconamericus*) de la fila externa de dientes premaxilares es un carácter bueno para distinguir los dos géneros en algunas localidades de Panamá, pero en especies de *Bryconamericus* de un ámbito geográfico más amplio, la fila externa de dientes premaxilares puede ser regular o irregular dependiendo de la especie. El ancho del tercer infraorbitario (= segundo suborbitario de Eigenmann) y el área "desnuda" asociada, son útiles

para la separación de los dos géneros en muestras de Panamá, pero son demasiado variables para el diagnóstico, cuando se incluyen especies de la América del Sur. El tipo y distribución de ganchos y espínulas en las aletas, son caracteres útiles, por lo menos en la América Central. Los machos adultos de *Astyanax* tienen ganchos óseos en los radios pélvicos y en los radios anteriores de la aleta anal, mientras que en *Bryconamericus* presentan espínulas más delicadas, que a veces se encuentran en todas las aletas. Aunque los ganchos y espínulas de las aletas aparecen sólo en la época de la reproducción, son eventualmente útiles para definir, por lo menos, algunos de los géneros de la familia Characidae, incluyendo linajes actualmente ubicados en *Astyanax* y *Bryconamericus*.

Eretmobrycon y *Bryconamericus* son muy similares en los caracteres discutidos anteriormente, difiriendo sólo en detalles morfológicos de las espínulas. *E. bayano* podría ser considerado como una especie de *Bryconamericus,* pero si aceptamos que este último género es polifilético y que las posibles relaciones de *E. bayano* con las otras especies del género son aún ignoradas, es mejor reconocer por el momento que el número peculiar de radios pélvicos y las especializaciones de la aleta caudal de la nueva especie son al mismo tiempo caracteres de un nuevo género.

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